Regeln

You have 25 minutes to submit answers. There are 11 questions and a correct answer is always a positive real number i.e. question i has answer $\theta_i \in \mathbb{R}_+$ for $i = 1, 2, \ldots, 11$. Submissions are made in the form of an interval:

$$[\text{Min}_i, \text{Max}_i]$$

Note that both endpoints are included. Each team has 16 guesses hence multiple submissions for questions is possible altough the score, and hence the correctness of the guess, will always be based on the **latest** submission to the question. Submissions can be made throughout the quiz. The team's score is given by the formula:

$$\left(10 + \sum_{i:\text{Min}_i \leq \theta_i \leq \text{Max}_i} \left\lfloor \frac{\text{Max}_i}{\text{Min}_i} \right\rfloor \right) \cdot 2^{11-\#\text{correct guesses}}$$

Where $\lfloor \cdot \rfloor$ is the floor function.

Hence, at the beginning of the quiz all teams have a score of $(10 + 0) \cdot 2^{11-0} = 20480$ points.
When the time is up, the team with the **lowest** score wins.
When submitting an interval it must clearly state:

- Team
- Question
- Interval.

Using scientific notation is allowed but must follow the conventions of R e.g.:
$100 = 1e2$
$93.000 = 93e3$
$1.010.000.000 = 101e7$
etc.
After submission the team (and everybody else) will be able to see whether the guess is correct or not and if so the value of the answer in the sum i.e. $\lfloor \text{Max}_i/\text{Min}_i \rfloor$ as well as the updated total score.

Fragen

1. The width of the painting *Guernica* by Pablo Picaso in cm.

2. Casualties in the largest maratime disaster; The wartime sinking of the German Wilhelm Gustloff in January 1945 in World War II by a Soviet Navy submarine.

3. Number of recently extinct mammals as classified by the International Union for Conservation of Nature (IUCN). Defined as any mammal that have become extinct since the year 1500 CE

4. Number of sub 1-year old per super 100-year old danish citizens pr november 2020.

5. Size in square kilometer of the Navajo Nation; the largest Native American Reservation in the US.

6. Let M_G, M_S, M_B we the number of Gold, Silver, and Bronze medals awarded at the Summer Olympics in Rio de Janeiro in 2016. What is $\max_{i \neq j} \{|M_i - M_j|\}$?

7. Number of songs on Spotify with more than 2 billion streamings, as of Nov 2020.

8. What is the lowest possible percentage of the popular vote needed to win the Electoral College, and thereby win the US Precidency.
   Assuming only two candidates and that the number of votes cast in each state is proportional to the population size of said state.

9. Number of days Karl Dönitz served as German head of state.

10. Number of digits in 100!

11. Let $(X_n)_{n \in \mathbb{N}}$ be a discrete Markov Chain on statespace $S = \{1, 2, 3, 4, 5, 6\}$ with transition probabilites $\mathbf{p_{ik}} = \frac{1}{6}, \quad i, k \in S$. Let $X_0 = 2$ and define

$$\tau = \inf \{n \geq \pi : X_n = 6\}$$

what is

$$E\left[\sum_{n=0}^{\tau} X_n\right]$$